29. A continuous-flow catalytic plate reactor as in claim 28 in which said first pair of apertures is arranged diagonally in said rectangular array and said second pair of apertures is arranged diagonally in said rectangular array transverse to said first pair.

30. A continuous-flow catalytic plate reactor as in claim 28 in which one of said aligned apertures in each pair is defined as a feed channel and the remaining one of said aligned apertures in each pair is defined as a product channel, and wherein said feed channel is terminated by a flow stopping member to force flows from said feed channel through said reaction zone to said product channels.

31. A continuous-flow plate reactor as in claim 28 in which said catalyst-coated platelets are substantially thinner than said transverse-flow plates.

32. A continuous-flow plate reactor as in claim 28 in which the void region of every traverse-flow is partially filled with means for redirecting gas flow into contact with at least some of said catalyst coated on said reaction zone side wall.

33. A continuous-flow plate reactor as in claim 32 wherein said flow directing means comprises a grooved metal plate.

34. A continuous-flow plate reactor as in claim 32 wherein said flow directing means comprises metal or ceramic spheres.

35. A continuous-flow plate reactor as in claim 28 wherein said separator platelets comprise an aluminum-containing alloy comprising at least one of iron, nickel, chromium, and cobalt coated with catalyst.

36. A catalytic plate reactor as in claim 28 wherein said coating of catalyst for said exothermic reaction is a combustion catalyst, and said catalyst for said endothermic reaction is a steam reforming reaction catalyst

37. A method for performing an endothermic reaction and an exothermic reaction simultaneously in isolated adjacent reaction chambers to supply heat required for said endothermic reaction by said exothermic reaction, said method comprising:

a) passing an endothermic reaction feed gas stream and an exothermic reaction feed gas stream through a stack of generally planar reaction zones comprising catalyst-coated platelets interleaved with relieved transverse-flow plates, each of said catalyst-coated plates and said transverse-flow plates comprising four apertures arranged in a substantially rectangular array and defined as a first pair of apertures and a second pair of apertures, all four apertures of one plate being aligned with all four apertures of all other plates of said stack;

b) each of said catalyst-coated platelets being impermeable to gas flow other than through said apertures and each having a coating of catalyst for said exothermic reaction on one side and a coating of catalyst for said endothermic reaction on the other side;

c) each of said transverse-flow plates further comprising a void region medial thereof which joins only one of said pairs of apertures to expose said catalyst coatings on both adjacent catalyst-coated plates and form a reaction zone therein, said transverse-flow plates alternating between those in which said reaction zone joins said first pair of apertures and those in which said reaction zone joins said second pair of apertures;

d) said endothermic reaction feed stream and said exothermic reaction feed stream are fed through two non-commingling flow paths through said stack;

e) the first of such flow paths extending from one of said aligned apertures of said first pair through the reaction zone of every second transverse-flow plate while passing over said coatings of catalyst for said exothermic reaction to the remaining one of said aligned apertures of said first pair;

f) the second of such flow paths extending from one of said aligned apertures of said second pair through all remaining reaction zones while passing over said coatings of catalyst for said endothermic reaction to the remaining one of said aligned apertures of said second pair;

g) generating heat at said coatings of catalyst for said exothermic reaction and conducting said exothermic heat through said separator platelets directly to said coatings of catalyst for said endothermic reaction to accelerate said endothermic reaction.

38. A method in accordance with claim 37 in which said first pair of apertures is arranged diagonally in said rectangular array and said second pair of apertures is arranged diagonally in said rectangular array transverse to said first pair.

39. A method in accordance with claim 37 in which said exothermic reaction is a combustion reaction and said coating of catalyst for said exothermic reaction is a combustion catalyst, and said endothermic reaction is a steam reforming reaction and said catalyst for said endothermic reaction is a steam reforming reaction catalyst.

40. A method of producing a catalytic wall plate reactor comprising the steps of: